Echocardiographic changes and ventricular mechanics in the indeterminate form of chagas disease

Del Castillo JM.1; Mazzarollo C.1; Diniz JV.1; Oliveira KB.1; Araujo D C L1; Alencar M P C1; Albuquerque ES.2; Sena A D M1; Brindeiro-Filho D.3; Silveira C A M2

1Echography School of Pernambuco, Echocardiography, Recife, Brazil
2Procape, University of Pernambuco, Graphic Methods, Recife, Brazil
3Pernambuco Federal University, Cardiology, Recife, Brazil

Introduction: According to the WHO, Chagas disease affects 8 to 10 million people, mainly in the Americas and in some European countries, with more than 10 thousand annual deaths. It presents an acute phase followed by a chronic, categorized as indeterminate, cardiac or digestive forms. After infestation, most patients remain asymptomatic, but 40% progress to symptomatic form at the rate of 1.8 to 5% patients/year. Evidence of myocardial fibrosis in 41% of these patients was found by magnetic resonance imaging.

Objective: To evaluate, by echocardiography, patients with Chagas disease, indeterminate phase, analysing dimensions, function and parameters of deformation and mechanical dispersion in left and right cardiac cavities.

Method: The study included 44 asymptomatic patients, 36 female, mean age 51 ± 10 years with positive Chagas serology and a control group of 44 healthy individuals, 35 female, mean age 52 ± 10 years. Left and right cavitary dimensions were evaluated, systolic and diastolic function, global myocardial deformation and mechanical dispersion. The groups were compared by the paired "t" test with significance level <5%.

Results: Demographic data (age, body surface area) with no significant differences. Left ventricular (LV) diameters (p <0.0001), septal thickness (p = 0.01), mass index (p <0.0001) and diameters and indexed volume of left atrium (LA) were higher in Chagas patients (p <0.0001). Left ventricular ejection fraction (EF) showed no significant difference between groups. The mitral E wave velocity showed no significant difference, but the e" wave velocity of tissue Doppler (p = 0.02) and the E/e" ratio (p = 0.002) were higher in Chagas patients. Global longitudinal strain (GLS) (p <0.0001) and mechanical dispersion of the LV (p <0.0001) were lower in Chagas patients. Basal right ventricular (RV) diameter, tricuspid annulus excursion (TAPSE) and tricuspid regurgitation velocity did not show differences and fractional area change of the RV (p = 0.03) was lower in Chagas patients. Longitudinal strain of the RV free wall (p = 0.01) was lower in Chagas patients and mechanical dispersion of RV (p = 0.002) was higher.

Conclusion: Asymptomatic patients with Chagas disease (undetermined phase), when compared with healthy individuals of the same age group, presented larger cavitary diameters, diastolic dysfunction and, deformation parameters of the left and right ventricles, with increased mechanical dispersion in both chambers. These data seem to corroborate recent results obtained by magnetic resonance imaging with gadolinium, suggesting areas of myocardial fibrosis in these patients.